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Developmental and Sex Differences in Types of Conduct Problems

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Maternal report of types of conduct problems in a high-risk sample of 228 boys and 80 girls (ages 4–18) were examined, using a version of the Child Behavior Checklist, expanded to include a range of covert and overt antisocial items (stealing, lying, physical aggression, relational aggression, substance use, and impulsivity). Age and sex effects were investigated. Boys were significantly more physically aggressive than girls. There were no sex differences for stealing, lying, relational aggression, and substance use. Lying and substance use increased with age, whereas relational aggression and impulsivity peaked during early adolescence. A small group of girls had pervasive conduct problems across multiple domains. For some domains such as stealing, lying, and relational aggression, girls showed at least as many problems as boys. Girls, in general, tended to have fewer conduct problems. On the other hand, when assessed across multiple domains, conduct problems in high-risk girls were possibly more pervasive than in high-risk boys, suggesting the possibility of a gender paradox.

KEY WORDS: conduct problems; sex differences; aggression; lying; stealing.

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Lower rates of Conduct Disorder and antisocial behavior are regularly found in girls relative to boys (e.g., Eme, 1979; Robins, 1991). For instance, McGee and colleagues (McGee, Silva, & Williams, 1984) found the rates of Conduct Disorder among 7-year-olds were more than twice as high in boys (7.4%) as in girls (3.5%). Similarly, Offord et al. (1987) found that rates of Conduct Disorder in 4–16-year-olds were three times higher in boys than in girls (8.1% versus 2.7%). One recent explanation suggests that criteria used in defining Conduct Disorder may be inappropriate for girls because of over-reliance on overt forms of conduct problems, such as physical aggression, that are more common in boys (Zoccolillo, 1993; Zoccolillo, Tremblay, & Vitaro, 1996).

A better understanding of conduct problems in girls might be obtained by descriptive investigations that include a wider range of problems beyond physical aggression. On a continuum of conduct problems from covert to overt, girls tend to show more covert forms of behaviors than boys (Kazdin, 1992; Loeber & Schmaling, 1985); therefore, to understand conduct problems in girls, it may be informative to expand our focus to include covert forms of behavior, such as stealing or lying, along with more overt forms, such as physical aggression.

Beyond the distinction between physical aggression and covert behavior, another form of aggressive behavior has been shown to be more prevalent in girls—relational aggression. Relational aggression (e.g., Crick & Grotpeter, 1995) or indirect aggression (e.g., Lagerspetz, Bjorkqvist, & Peltonen, 1988) involves harming others through purposeful manipulation or damage to their peer relationships, such as by spreading rumors (Crick & Grotpeter, 1995). Recent studies have shown that a relationally oriented form of aggression is more characteristic of girls than is overt, physical, aggression (Crick & Grotpeter, 1995; Lagerspetz et al, 1988), and that relational aggression is more prevalent in girls than in boys (Crick & Grotpeter, 1995). Relational aggression in elementary school children predicts worse future social adjustment across the ensuing academic year in girls, but not in boys (Crick, 1996). This suggests that broadening the range of types of conduct problems considered to include relational aggression might also result in a more gender-neutral designation.

Beyond broadening the scope of conduct problems considered, another alternative that would further understanding of conduct problems in girls would be to focus on the relative prevalence of behaviors for children of each sex. Boys and girls differ in their base rates of many types of behavior (e.g., rough play), as well as in clinically significant conduct problems (e.g., physical aggression) (Maccoby, 1986; Zoccolillo, 1993). Given that boys generally show higher rates of such behaviors, applying the same diagnostic threshold for boys and girls would invariably lead to the conclusion that more boys have conduct problems than girls. Examining the individuals who fall into the upper range on

these types of conduct problems for their gender might provide us with crucial information.

It has been suggested that the risk for deviant outcomes is higher in girls with a diagnosis of disruptive behavior disorder rather than in boys with that disorder (Loeber & Keenan, 1994). Sometimes referred to as the *gender paradox*, the notion is that the gender with the lower prevalence of a disorder actually is at a higher risk of poor outcomes. Thus, pervasive forms of psychopathology would be expected to be more manifest in girls at high-risk for disruptive disorders than in similarly high-risk boys. We assume that the gender paradox is especially clear in the tail end of distributions of deviancy, and can be best studied in high-risk rather than in general populations. Specifically, we expect that, for boys, the distribution of multiple forms of antisocial behavior would positively decelerate, with few boys showing the highest variety or pervasiveness of antisocial behaviors. In girls, however, we expect a more bimodal distribution, with a concentration of girls showing a high variety of antisocial behavior.

We examined a range of different antisocial behavior problems (stealing, lying, physical aggression, relational aggression, impulsivity, and substance use) in boys and girls from a high-risk sample. We first explored sex differences in these behaviors, and whether the results varied with age. Next, we examined the pervasiveness of the antisocial behaviors in each gender, particularly to verify whether the distribution of multiple forms of psychopathology was positively decelerating for males, but bimodal for females.

METHOD

Background

The present report is one in a series based on an ongoing study conducted at Columbia University (initiated in 1992) of children at risk for developing antisocial behavior by virtue of family history, male sex, and urban residence. For complete details of the study design and sampling procedures, see Wasserman, Miller, Pinner, and Jaramillo (1996). Briefly, at intake, this sample consisted of 109 families with an adjudicated son, followed yearly for four study waves, approximately 15 months apart. In order to study children at risk for Conduct Disorder and antisocial behavior, data on delinquent boys (adjudicated in the Family Court; $n = 109$) and their younger brothers were collected in the first two waves of data collection. In the course of the Year-3 assessment, on which the current analyses are based, data were collected for all children, including sisters, in study families. Information was collected by caregivers' report on their own functioning, their parenting practices, and their children's functioning and psychological status.

Participants

Mothers were asked to provide behavioral reports on all biological children between the ages of 4 and 18 who resided with them in the household. This included the delinquent boys ($n = 66$ for the current, Year-3, analyses), their younger brothers ($n = 162$) and their sisters ($n = 80$). Twenty of the original 109 families had been lost to follow-up by the time of the Year-3 assessment. Among the remaining 89 families, 20 delinquent boys were older than 18 years of age at Year-3, and thus were excluded from the current analyses because they were beyond the range for which the CBCL was standardized, although their brothers and sisters who were 18 years old or younger were included. Data for three additional delinquent boys (among the 89 participating families) were not collected in Year-3 because of their death ($n = 2$) or incarceration ($n = 1$) subsequent to Year-1 data collection. Consequently, 43 of the original 109 delinquent boys in the Year-1 assessment were not included in the present report. The total sample consisted, then, of 228 boys and 80 girls.

The average age of all youth in the Year-3 assessment was 12.9 years ($sd = 3.89$), and the average age of boys (13.3; $sd = 3.63$) and girls (11.9; $sd = 4.42$) did not differ significantly. Families lived in impoverished urban neighborhoods; both biological parents were present in 17.1% of the households. Based on the Year-3 data, 54% of the families were African American, 42% Hispanic, and 4% of "Other" ethnicity. On average, caregivers had completed 11 years of school; 12% of caregivers had never worked for pay.

Procedure

This paper presents maternal report of conduct problems in boys and girls based on Year-3 data (1994–1995). Interviews were conducted by college graduates with prior experience in use of standardized assessments with children and families, who were familiar with the communities in which study families resided. Spanish-speaking families were interviewed by bilingual staff, and questions were read aloud for parents not proficient in reading.

Measures

Mothers' report of children's behavior was used for a number of reasons. The wide age range (from 6 to 18 years old) of youth studied meant that self-report would likely be confounded by large differences in cognitive developmental levels. Self-awareness and ability to report accurately on one's own behavior differ greatly across the ages included. Moreover, because subjects were from a court-referred sample, children attended many different schools (and some were not still attending

school), making teacher-report or peer nomination procedures unfeasible. Finally, the nature of many of the items on the behavioral rating measures meant that mothers were likely to be better informants than others.

Child Behavior Checklist (CBCL)

The CBCL is a widely used standardized measure of children's problem behaviors. Pearson correlations range from .80 to .90 for both agreement between trained observers simultaneously recording children's behavior (Achenbach, 1991; Achenbach & Edelbrock, 1983) and for test-retest reliability of informants' reports repeated over periods of one week to one month (Achenbach & Edelbrock, 1983, 1986). Because of their relevance to the constructs of the Indicators of Conduct Problems (ICP), four subscales of the CBCL (Aggression, Delinquency, Social Problems, and Attention Problems) were chosen to compare with the ICP subscales (see below).

Indicators of Conduct Problems (ICP)

Loeber, Farrington, Stouthamer-Loeber, and Van Kammen (1998) developed a set of maternal report items of conduct problems that expand on the range of conduct problems measured in the CBCL. Comparable to CBCL format, items are scaled from 0 to 2, reflecting whether they were endorsed as "Not True," "Sometimes True," or "Very True," respectively. We categorized 60 of these items, on an a priori basis, into six subscales: Stealing, Lying, Physical Aggression, Relational Aggression, Impulsivity and Substance Use. Six items were eliminated after item analysis because of low correlations with other items in their subscales (3 in Stealing, 2 in Lying, and 1 in Physical Aggression), resulting in 54 items. Excellent internal reliabilities (.76–.88) were achieved on all six subscales (see Table I). Based on the procedures suggested by Achenbach (1991) for the CBCL, missing data were replaced by scale modes separately for each sex (3 cases on Stealing), and we eliminated any subscale in which more than 7% of data were missing (2 cases on Lying). In order to examine the results across the subscales, subscale means were used (subscale score divided by number of items within a subscale).

Statistical Analyses

Separately for boys and girls, correlations among the six subscales of the ICP were used to examine the degree to which the constructs are independent or overlapping. Differences between boys and girls in the magnitude of the correlations were examined based on a multivariate test for homogeneity of dispersion

Table I. Indicators of Conduct Problems (ICP): Subscales Measuring 6 Domains of Problem Behaviors

Stealing Cronbach's alpha: .88	Lying Cronbach's alpha: .88	Physical aggression Cronbach's alpha: .76	Relational aggression Cronbach's alpha: .82	Impulsivity Cronbach's alpha: .87	Substance use Cronbach's alpha: .86
Steals at school	Cheats on school tests	Hits or physically fights with students	Tells nasty things behind others' backs	Wants things right away	Interested in drugs
Shoplifts	Gives doubtful explanations about behavior	Carries a weapon	Teases others behind adults' backs	Impatient	Suspected of using drugs
Borrows w/o permission	Does not keep promises	Participates in gang fights	Picks on others	Easily frustrated	Smokes cigarettes
Takes things behind others' backs	Takes other's credit	Hits or physically fights with siblings	Tries to get even	Talks out of turn	Suspected of drinking
Steals from vehicle/building	Says somewhere when somewhere else	Hits teachers	Quarrels with other kids for slight reasons	Disturbs other children	
Steals bike/skateboard	Does not come straight home from school	Rough in sports		Behaves irresponsibly	
Brings home things & claims found	Shifts responsibility to others	Rough at play		Behaves explosively and unpredictably	
Has more money than allowance	Exaggerates	Starts fights over nothing		Pesters until gets things	
Suspected of stealing outside home	Denies wrong deeds	Collects weapons		Changes mind often	
Borrows money and does not pay back	Goes to places not supposed to go				
Hides things	Doesn't let others know when changes plans				
Uses other kids' things without permission	Refuses to explain where has been				
Wanders onto others' property					
Takes food w/o permission					
Rummages through others' possessions					

matrices. Overlap of the ICP scales with the four CBCL scales was also examined by correlation. Cross-group comparisons (boys vs girls, delinquents vs younger brothers) of correlations were analyzed by Fisher's *r*-to-*z* transformations (Hays, 1963).

To examine developmental differences, the sample was divided into three comparably sized groups: Childhood (6–11 years: 72 boys, 36 girls), Early Adolescence (12–15 years: 76 boys, 21 girls), and Late Adolescence (16–18 years: 80 boys, 23 girls).

We first conducted a MANOVA that examined effects of Age Group and Sex on the six ICP subscales (SPSS 9.0, 1997). We then conducted a series of 2 (sex) by 3 (age group) ANOVA's for each of the subscales. Post-hoc analyses on the quadratic effect of Age were conducted when, in either sex, the mean of the middle (Early Adolescent) group was higher than the means of both the Childhood and Late Adolescent groups. In addition, differences between physical and relational aggression scales were examined to determine whether either sex displayed more relational aggression than physical aggression, while age effects were controlled.

Because in many instances, by design, more than one child in a family was included in the sample, within-family variance in the ANOVAs was partialed out (Proc MIXED, SAS, 1991). This procedure is shown to be superior to a fixed-effects analysis (e.g., SAS GLM procedure) in accommodating a great variety of study designs (Murray & Wolfinger, 1994). Note that this statistical procedure does not produce an omnibus *F* value for the model as a whole (SAS, 1991), and interpretations of the results are based on the *F* values of each of the main effects and the interaction effects.

We combined the delinquent boys and their younger brothers in our analyses because a number of the younger brothers were already manifesting significant levels of conduct problems (Wasserman et al., 1996), and the fact that delinquents and their brothers did not radically differ in the prevalence and patterning of their behavior problems. Nonetheless, because all delinquent boys had a history of adjudication, while many of their brothers were only *at risk* for delinquent behavior (although some have been adjudicated themselves), analyses were conducted with and without the delinquent boys, and comparisons were made between these two subgroups of boys.

Boys and girls were expected to differ in their base rates of different types of conduct problems. Therefore, conduct problems were investigated separately for boys and girls based on the distribution of scores within each sex group. In order to designate elevated levels of conduct problems within each sex group, each of the six ICP subscales was dichotomized at approximately half a standard deviation above the mean (about the 70th percentile), separately for boys and girls. In other words, scores were dichotomized at a point roughly equivalent to half a standard deviation above the mean, corresponding to a "medium effect" size (Cohen, 1977), in order to indicate a clinically noticeable difference. Each youth was then assigned a score

ranging between 0 and 6, indicating the number of their subscales that were above the 70th percentile for members of their own sex, as a measure of the pervasiveness of their conduct problems.

RESULTS

Correlations Among the ICP Subscales and Between the ICP and the CBCL

Correlations Among Six Subscales of ICP

For both boys and girls, ICP subscales were moderately correlated with each other (Table II). Multivariate test for homogeneity of dispersion matrices showed that the correlations among the subscales based on girls were higher than the correlations based on boys (*Box's* $M = 112.00$; $F_{(21,73191.49)} = 5.17$, $p < .0001$). Despite the general pattern of girls' higher across-subscale correlations, girls' Substance Use was not associated with other subscales, and was only significantly related to Lying (Table II). When Substance Use was excluded, multivariate test for homogeneity of dispersion matrices showed that the magnitude of the correlations remained higher for girls than for boys (*Box's* $M = 87.82$; $F_{(15,78603.24)} = 5.17$, $p < .0001$). Excluding Substance Use, correlations among subscales ranged from .64 to .84 (average $r = .74$) in girls and from .47 to .76 (average $r = .62$) in boys. Also excluding Substance Use, correlations among subscales in girls were significantly higher ($p < .05$) than correlations among subscales in boys for four out of ten correlations, based on Fisher's *r*-to-*z* transformation (Hays, 1963): Lying and Physical Aggression; Relational Aggression and Stealing; Relational Aggression and Lying; and Stealing and Lying.

The pattern of correlations among subscales for the delinquent boys did not differ significantly from that for their brothers (data not shown).

Correlations Between the ICP Subscales and the CBCL Subscales

The ICP subscales were moderately correlated with the four CBCL subscales examined (Table II). As expected, CBCL Aggression was highly associated with both the Physical Aggression and Relational Aggression subscales of the ICP for both boys and girls. While correlations between the ICP and the CBCL were generally slightly higher in girls than in boys, only a single sex difference (that for the association between Stealing and Aggression) was statistically different, based on Fisher's *r*-to-*z* transformation (Hays, 1963), no more than what would be expected by chance.

Again, delinquent boys did not differ substantially from their brothers (data not shown) in the strength of associations between ICP and CBCL subscales, except that Substance Use and Social Problems were significantly more strongly

Table II. Correlations Among Subscales of the ICP (Indicators of Conduct Problems) and Between the ICP and the CBCL (Child Behavior Checklist)

		Physical aggression		Relational aggression		Stealing		Lying		Impulsivity		Substance use	
		Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ICP	Relational aggression	.73*	.84*	1.00	1.00								
ICP	Stealing	.51*	.66*	.60*	.84*	1.00	1.00						
ICP	Lying	.47*	.71*	.64*	.84*	.76*	.87*	1.00	1.00				
ICP	Impulsivity	.64*	.64*	.62*	.73*	.57*	.66*	.70*	.64*	1.00	1.00		
ICP	Substance use	.20*	.07	.26*	.00	.56*	.11	.52*	.28*	.32*	.01	1.00	1.00
CBCL	Aggression	.78*	.80*	.73*	.82*	.55*	.72*	.63*	.72*	.81*	.83*	.20*	.00
CBCL	Delinquency	.49*	.51*	.49*	.51*	.69*	.58*	.74*	.65*	.65*	.53*	.64*	.62*
CBCL	Social problems	.45*	.53*	.52*	.56*	.35*	.55*	.48*	.59*	.55*	.63*	.08	−.07
CBCL	Attention problems	.52*	.51*	.50*	.49*	.50*	.52*	.64*	.53*	.71*	.80*	.27*	.08

* $p < .05$.

associated among the delinquent boys than among their brothers ($r = .47$ and $r = .05$ respectively; $p < .05$), based on Fisher's r-to-z transformation (Hays, 1963).

Sex and Developmental Differences in Antisocial Behavior

To examine differences in the levels of conduct problems between the delinquent boys and their brothers, ANOVAs were conducted comparing these two groups of boys. By design, delinquent boys were older than their younger brothers, so that these analyses controlled for Age. The delinquent boys had significantly higher levels of Physical Aggression [$F_{1,118} = 4.97$, $p = .03$] and Substance Use [$F_{1,118} = 7.51$, $p = .007$] than their brothers, controlling for Age.

Results of the MANOVA showed significant effects of Age group (Pillai's trace: [$F_{12,576} = 5.74$, $p < .0001$]), and Sex (Pillai's trace: [$F_{6,287} = 3.24$, $p < .005$].

A series of 2- (Sex) by-3 (Age Group) ANOVAs tested differences between boys and girls. The pattern of results in the ANOVAs was the same for analyses with and without the delinquent boys, except for Impulsivity (significantly higher in boys than in girls when the delinquents were included; no sex difference when the delinquents were excluded). Therefore, results on all subscales, except for Impulsivity, are based on analyses that combined both groups of boys and compared them to girls.

Sex Effects

Boys showed significantly higher levels of Physical Aggression than girls (Table III) across all age groups [$F_{1,196} = 14.23$, $p < .005$]. Boys showed significantly higher levels of Impulsivity than girls (Table III) when the delinquent boys were included in the analysis [$F_{1,196} = 4.72$, $p = .03$], but not when the delinquent boys were excluded (data not shown). There were no significant sex effects on Relational Aggression, Stealing, Lying, and Substance Use.

Age Effects

Lying [$F_{2,196} = 5.60$, $p < .005$] and Substance Use [$F_{2,197} = 20.17$, $p = .0001$] increased significantly with Age for both boys and girls (Table III). There were no significant Age effects on other subscales. Because subscale means for Impulsivity, Relational Aggression, Stealing, and Lying were higher during Early Adolescence than at other ages for girls (Table III), analyses testing the quadratic effect of Age on these subscales were conducted, with Age as a continuous variable. Results showed significant quadratic effects of Age on Relational Aggression [$F_{1,193} = 6.51$, $p = .01$] and Impulsivity [$F_{1,196} = 4.30$, $p < .05$], with no significant interaction effect between Sex and the quadratic effect of Age.

Table III. ANOVAs and Scale Means of Antisocial Behaviors in Boys and Girls

	Scale means						Significant effects (F and p values)		
	Boys			Girls					
Age (years)	6–11	12–15	16–18	6–11	12–15	16–18	Age	Sex	Age by sex
Physical aggression	.33	.18	.19	.10	.15	.16	ns	$F_{(1,196)} = 14.23$ $p = .0002$	ns
Impulsivity	.52	.44	.44	.30	.41	.35	ns	$F_{(1,196)} = 4.72$ $p = .031$	ns
Relational aggression	.31	.31	.23	.23	.40	.27	ns	ns	ns
Stealing	.15	.14	.20	.09	.21	.15	ns	ns	ns
Lying	.20	.28	.33	.09	.29	.24	$F_{(2,196)} = 5.6$ $p = .004$	ns	ns
Substance use	.01	.05	.43	.00	.06	.26	$F_{(2,197)} = 20.17$ $p = .0001$	ns	ns

Physical Aggression and Relational Aggression

In order to examine whether Relational Aggression was more common than Physical Aggression in either girls or boys, we compared levels of each subscale for each sex separately. For both boys and girls, mean scores for the Relational Aggression subscale were higher than those for Physical Aggression (for boys and girls, respectively, $t_{224} = 2.92$, and $t_{76} = 4.24$, both p's $< .005$). To further explore differences in the likelihood of each sex being classified as relationally aggressive, even at more extreme levels, youth were classified as relationally aggressive if they received a score of at least one standard deviation above the mean for their sex. Results showed that relatively equal proportions of girls and boys were classified as relationally aggressive (12.5% and 13.2% respectively), and the difference was not statistically different. Finally, as Table II shows, Relational and Physical Aggression were substantially positively correlated for **both** sexes (r's $= .73$ and .84 for boys and girls, respectively).

Patterns of Antisocial Behavior for Each Sex

We next examined differences between boys and girls in the pervasiveness of their conduct problems, determining the number of ICP subscales on which each individual scored above the 70th percentile for their sex. For boys, this distribution showed a positive skew, in which boys clustered at the lower end of the distribution and the number of boys decreased as the number of affected domains of conduct problems increased. In contrast, the distribution for girls was bimodal, with a large cluster of girls who had no or few elevated subscales of conduct problems (73.8% for 0-2 subscales), and another substantial cluster (18.8%) with problems in five or more domains. In contrast, only 8.8% of boys showed elevated scores in 5 or more domains.

To examine the degree to which "5 or more elevated subscales" might be designated as indicative of pervasiveness of conduct problems, we looked more closely at the scores for the 45 individuals so designated. DSM-IV (1994) notes four domains in which Conduct Disorder symptoms may appear. The ICP subscales map well onto two of these domains: Physical Aggression and the two subscales of Lying/Stealing. A third domain, destruction of property, is indexed in these data by a single ICP item that did not load on any of the subscales ("Sets fires") and by 2 CBCL items ("Vandalism" and "Destroys others' things or property"). The fourth DSM-IV domain, rule violations, is limited by age requirements so that it does not lend itself to closer examination in our data, which span a wide age range. Another domain of conduct problems, highly comorbid in some populations with Conduct Disorder, is Substance Use, tapped by another ICP subscale.

We compared the 45 pervasive problem youth (those with 5 or more elevated subscales) to individuals with 4 or fewer elevated subscales. All 45 showed elevated

scores (above the 70th percentile) on both of the Conduct Disorder domains that are assessed with the ICP, as compared to only 41.8% ($n = 110$) of those with 4 or fewer elevated subscales ($\chi^2_{1,N=308} = 52.0,\ p < .0001$). Moreover, 51.1% ($n = 23$) of the pervasive problem youth scored above the 70th percentile for Substance Use, as compared to 11% ($n = 29$) of non-pervasive problem youth ($\chi^2_{1,N=308} = 44.0,\ p < .0001$). Finally, youth with pervasive problems were more likely to receive a score of "2"(Very True") on one or more of the 3 items that measured destruction of property [22% and $n = 9$, as compared to 4.2% and $n = 11$: ($\chi^2_{1,N=302} = 18.03,\ p < .0001$)].

The bimodal distribution in girls is not a function of their age distribution. Among the 15 girls who showed pervasive problems, six were older than 15 years; six between 12 and 15 years; and three were younger than 12 years. Girls with pervasive conduct problems had a mean age of 13.53 ($SD = 3.60$), not significantly different ($p = .11$) from the mean age of girls with 4 or fewer domains of conduct problems (mean = 11.53, $SD = 4.52$). Furthermore, mean age was not significantly different across levels of pervasiveness in conduct problems ($F_{6,73} = 1.79,\ p = .11$) in general.

DISCUSSION

In the present sample, boys are significantly more physically aggressive than girls, consistent with others' findings (e.g., Hyde, 1986; Maccoby & Jacklin, 1974, 1980; McDermott, 1996). However, girls in this high-risk sample do not differ significantly from boys on measures of stealing, lying, relational aggression and substance use. Lying and substance use increase with age across the ages studied whereas relational aggression and impulsivity peak in early adolescence in both sexes. Finally, almost 20% of girls have conduct problems in multiple domains.

This study supports previous findings that levels of relational aggression in girls are at least equal to, or higher than, levels of relational aggression in boys. Lagerspetz and Bjorkqvist (1994) suggested that because girls' direct aggression is socially discouraged, they are likely to resort instead to indirect aggression. However, empirical support for this hypothesis has been inconsistent. Lagerspetz et al. (1988) reported higher rates of peer-rated indirect aggression in 11–12 years old girls than in same-aged boys. In that study, girls received significantly higher scores than boys on seven of ten items measuring Indirect Aggression, but boys received higher (non-significantly) scores on the other three items, suggesting that sex differences were not unambiguous. In another study, Lagerspetz and Bjorkqvist (1994) found that girls had higher levels of relational aggression than boys in 11-, 15-, and 18-year-olds, but not in the 8-year-old cohort. In a school-based study, Crick and Grotpeter (1995) classified third- to sixth-graders based on their likelihood of scoring one standard deviation above the mean on peer-rated relational aggression. Girls were more likely than boys to be classified as relationally

aggressive. We used a procedure similar to that of Crick and Grotpeter, although with a different measure of relational aggression, and found no sex difference in the likelihood of being classified as relationally aggressive (12.5% of girls and 13.2% of boys). It is not clear how much of the discrepancy in these findings is attributable to differences across studies in (1) measurement (peer- versus caregiver-ratings); (2) participants' ages; or (3) study samples (unselected school children versus children at risk for conduct problems).

In the current high-risk sample, relational aggression peaked in early adolescence and decreased into late adolescence in both sexes. In a study of 6- to 12-year-old children, Rotenberg (1985) found that self-report of indirect retaliation in aggressive encounters became more common in the older cohorts in both sexes. Rotenberg postulated that indirect aggression might be more developmentally "advanced" than direct aggression. However, Rotenberg's sample did not include children beyond the age of twelve so that the trend into adolescence was not determined. The current study found that relational aggression peaked during early adolescence, a time consistent with the age of Rotenberg's (1985) oldest subjects; however, the present decrease into later adolescence is inconsistent with a maturation hypothesis. More studies across a wide spectrum of ages would further our understanding on relational aggression developmentally.

The current findings show that physical and relational aggression are highly correlated in both boys and girls (.73 and .84 respectively), consistent with both the magnitude and direction of such associations in previous research. For instance, Crick (1996) reported a correlation of .77 between these two types of aggression in a community sample of boys and girls. If children who engage in physical aggression are also more likely to exhibit relational aggression, then one form of aggression does not substitute for the other in either sex; the present study of high-risk boys and girls finds no support for the notion (Lagerspetz & Bjorkqvist, 1994) that indirect aggression is substituted when direct aggression is negatively sanctioned. Rather, for both sexes, higher scores in relational aggression were related to higher scores on a range of indicators of conduct problems.

The present findings suggest that a gender paradox may operate in the realm of conduct problems among high-risk girls and boys. While girls in general are found to have fewer conduct problems than boys, conduct problems in girls were more pervasive than in boys. While girls had lower levels overall, a sizable proportion (18.8%) exhibited problems in five or more domains (compared to 8.8% of boys), and this phenomenon is not a function of age.

Ciocco (1940) first noted the phenomenon of gender paradox several decades ago. Subsequent studies have replicated this phenomenon in regard to conduct problems (e.g., Loeber & Keenan, 1994; Robins, 1966) and at least two hypotheses have been proposed to explain it (DeFries, 1989; James & Taylor, 1990). The Polygenetic Multiple-Threshold Model (DeFries, 1989) posits that the underlying vulnerability of males and females is congruent, but the threshold that needs to

be exceeded before an individual is affected differs for the two sexes. On the other hand, the Constitutional Variability Model (James & Taylor, 1990) assumes a greater genetic variability in males; therefore, more males show milder forms of disorders as the result of this variation (for a review, see Eme, 1992).

We raise an alternative explanation that sex may moderate the impact of risk (e.g., familial or environmental risk) differently at different levels of risk. Girls may be more protected at low and medium levels of social risk, but might be more vulnerable as social risk accumulates over a certain threshold. Some studies have found that female sex is a protective factor against psychopathology (Earls, 1987; Eme, 1979; Rutter, 1990); however, one study of multiple-problem families found that female sex was a protective factor from birth to age 10 only, and that the trend reversed in the second decade of life (Werner & Smith, 1982; 1992). It is therefore crucial for future studies to explore the moderating effects of sex on conduct problems at different ages and levels of risk.

Several researchers have correctly cautioned that a gender paradox may merely be the result of a differential clinical referral system that is more sensitive to the problems of boys than girls, so that only the most deviant girls are referred for services (Eme, 1992; James & Taylor, 1990). However, this differential referral system hypothesis is not operating in the current sample since it was not a clinically referred sample.

In conclusion, based on a sample at high-risk for conduct problems, we found that girls have at least as many problems as boys in certain domains, especially when we broaden our perspective to include covert forms of conduct problems (i.e., stealing, lying) and relational aggression. Further, as is the case for high levels of physical aggression, high levels of relational aggression are associated with elevated problem behaviors across a number of domains. Relational and physical aggression, rather than substituting for each other, are similarly correlated, in both boys and girls, with other conduct problem areas. Although, on average, girls have fewer conduct problems than boys, a substantial group of girls has pervasive conduct problems across multiple domains; this may reflect a gender paradox.

To better understand the unique phenomenology of antisocial behavior in girls, researchers should expand the range of studied domains of conduct problems, examining them based on their sex-specific prevalence. Expanded prospective studies of the predictors, developmental pathways, and consequences of girls' conduct problems are necessary if we are to further our understanding of girls' antisocial behavior.

The present study has a number of weaknesses. Because we studied a sample of children at risk for developing antisocial behavior, we did not use a community sample. Therefore, the present findings may be most relevant to a population at high-risk for developing antisocial behavior and may not be generalizable to the general population. Most children in the present sample were exposed to high levels of social-environmental risk. A community sample of individuals with conduct

problems might show different results. The present sample includes a rather small number of girls to explore conduct problems in a wide age range; as a result, the findings may not be stable. Finally, data are derived solely from maternal report; combining of data across multiple informants would likely lead to more robust findings. Nonetheless, the present findings lend support to recent efforts to better characterize the nature of aggressive behavior in girls.

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